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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,533	11/26/2003	Anandaroop Bhattacharya	111079-135105	8659

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EXAMINER	
CHERVINSKY, BORIS LEO	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,533	BHATTACHARYA ET AL.	
	Examiner	Art Unit	
	Boris L. Chervinsky	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 9-16, 18-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozmat in view of Dessiatoun et al and further in view of Wirtz or alternatively in view of Weber et al.

Ozmat discloses the cooling device for the integrated circuit 3, 9 coupled to substrate 11 including the thermal management device comprising an aluminum case 17 that has a cavity (see Fig. 3) enclosing the porous medium 19 filling substantially entire cavity that is bonded to the case 17 (col.3, lines 61-63) and cooling fluid such as water circulating through the porous medium in the case, and there is a watertight seal between the case and the integrated circuit; the porous medium is the metal foam made of copper or aluminum (col. 3, lines 44-49), the thermal interface 13 is coupling the integrated circuit to the case 17. Ozmat discloses the claimed invention except the heat exchanger and the pump. Dessiatoun discloses the thermal management device including the heat exchanger 36 and the pump 38, the inlet coupled to the pump and the outlet coupled to the heat exchanger. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the heat exchanger and the pump as disclosed by Dessiatoun in the device disclosed by Ozmat for cooling and circulation of

the cooling medium for efficient heat removal. Ozmat discloses the claimed invention but does not specifically indicate that the porous medium is micro-porous. Wirtz and Weber disclose the thermal management device having microporous medium and Wirtz discloses the size of the pores to be approximately 05-1.5 mm. as claimed in claim 6. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use micro-porous medium as disclosed by Wirtz or Weber in the device as disclosed by Ozmat. The method steps of claims 20-25 are necessitated by the device structure as disclosed by Ozmat in view of Dessiatoun and Wirtz; in reference to claim 25 the fluid flow is inherently partially induced by natural buoyancy resulting from either capillary attraction or vapor/condensation process as result of applied heat.

The details drawn to the size of the porous medium and the integrated circuit (claim 19) would have been an obvious at the time the invention was made to a person having ordinary skill in the art, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). The intended use the cooling device for an entertainment unit, disk player or networking interface is obvious since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

3. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozmat in view of Dessiatoun et al and further in view of Wirtz or alternatively in view of Weber et al. and further in view of Landin et al.

Ozmat discloses the claimed invention except various sizes of the pores in different areas of the porous medium and porosity at or above 80%. Landing discloses a heat exchanger (see Fig. 5) having a porous material enclosed in a housing, the porosity of the material is variable and in the range from 40 to 90% (see abstract). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the porosity in range as disclosed by Landin et al. in the device disclosed by Ozmat for optimum heat conduction,

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozmat in view of Dessiatoun et al. and further in view of Wirtz or alternatively in view of Weber et al. and further in view of Layton et al.

Ozmat discloses the claimed invention except epoxy sealant. Layton discloses the watertight case that includes the epoxy sealant 13a. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the epoxy sealant as disclosed by Layton et al. in the device disclosed by Ozmat in order to provide reliable seal between the case and the integrated circuit.

Response to Arguments

5. Applicant's arguments filed 02/23/06 have been fully considered but they are not persuasive. In response to applicant's argument that Wirtz and Weber disclose microporous material occupying just a portion of the cavity is not convincing because

the rejection is based on combination of teachings of Ozmat and Wirtz or Weber. The Ozmat reference teaches the porous material occupy the entire cavity, therefore by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The rejection based on Pokharna has been withdrawn; and new basis for the rejection is established.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Boris L. Chervinsky whose telephone number is 571-272-2039. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800 ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BORIS CHERVINSKY
PRIMARY EXAMINER

3/25/6